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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,747	12/14/2004	Jochen Dieter Mannhart	ABACP0110US	3101

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EXAMINER	
VIJAYAKUMAR, KALLAMBELLA M	
ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/501,747	MANNHART, JOCHEN DIETER	
	Examiner	Art Unit	
	KALLAMBELLA VIJAYAKUMAR	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *41,42,44-48 and 50-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41-42, 44, 46-48, and 50-59* is/are rejected.

7)☒ Claim(s) *45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/06/2008 has been entered.

Claims - 41, 55 and 57 were amended. Claims 43 and 49 cancelled. Claims 41-42, 44-48, and 50-59 are currently pending with the application.

Applicant's arguments and amendments filed over come the rejections under 35 USC 112-I paragraph and 112-II paragraphs cited in the last office action. Applications are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 41-42, 44, 46, 50-53, 57 and 59 are rejected under 35 U.S.C. 103(a) as obvious over Truchan et al (US 6,455,166).

The examiner makes of record that instant claims 41, 50 and 59 recite a broad range of components followed by a series of narrow ranges. For examination purposes, the examiner asserts that the narrow ranges recited in instant claims 41, 50 and 59 are merely exemplary ranges, and thus, the prior art will be applied against the broadest ranges recited in instant claims 41, 50 and 59. Furthermore, the examiner suggests that applicant should delete the narrow ranges from instant claims 41, 50 and 59, and add new dependent claims that recite the narrow ranges recited in instant claims 41, 50 and 59.

Truchan et al et al teach a method of making a superconductor tape containing a biaxially textured polycrystalline face-centered cubic metal article such as Ni and Ni alloy having grain boundaries with misorientation angles greater than about 8 degrees limited to less than about 1%. The metal substrate was first rolled to at least about 95% thickness reduction followed by a first annealing at a temperature less than about 375 C followed by a second rolling operation of not greater than about 6% thickness reduction is provided, followed by a second annealing at a temperature greater than about 400 -1000 C (Abstract; Cl-5, Ln-1; Cl-6, Ln 30; Cl-5, Ln 33-47). The YSZ/CeO2 buffer layer was deposited by IBAD and YBCO was grown by epitaxy over the substrate (Cl-5, Ln 3-21); and polycrystalline nature of the superconductor would be obvious over the template deposition of the material. Further, In a cube texture, a cube axis, (100), lies parallel to the plane of the sheet and a cube edge, [001], is parallel to the rolling direction, i.e., [100]<001> (Cl-4, Ln 60-65).

The prior art is silent about the shape, structure and ratio of the superconductor grains per claims-41 and 53 and microstructure of the buffer layer per claims 42 and 52.

With regard to claims 41-42 and 52-53, the prior art teaches a superconductor tape and a method of making it wherein its structure, components used to make the tape and the process steps used to make the tape are similar to that taught by the applicants (See Spec., Pg-12, Para-1), and further have the same common utility as the superconducting tape with high Jc, and the presence of the claimed shape and ratio of the microcrystal grains of the metallic substrate in the prior art tape would be obvious,

and prima facie obvious over these claims. The presence of percolation path along the length of the tape will be obvious because the composition and structure of the tape are similar to that by the applicants.

With regard to claims 44, 51 and 59, the prior art teaches IBAD deposition of YSZ and/or CEO2. Further, it would have been obvious to polish or smoothen the surfaces of the tape layers by mechanical or ion-beams per claim 44, because it was well known to do so in the superconductor art (Furuto et al, US 3,983,521, Cl-8, Ln 50-55; Arendt et al, (US 5,872,080, Cl-6, Ln 10-13; Theme et al, US 6,458,223, Cl-12, Ln 5-9) at the time of disclosure of the invention by the applicants.

With regard to claims 46 and 57, the prior art discloses IBAD deposition of REBACUO (Cl-1, Ln 42-50) over a substrate, and it would have been obvious to a person of ordinary skilled in the art to deposit ReBaCuO over substrates of Truchan with less than 1% grain boundaries over 8 degrees misorientation as functional equivalent of YBCO with predictable results and reasonable expectation of success and performing of the steps to attain the claimed misorientation of the long grains would be obvious.

With regard to claim-50, the prior art product/tape is similar to that produced by the instant claimed method steps by the applicants, and When the reference teaches a product that appears to be an obvious variant of, the product set forth in a product-by-process claim although produced by a different process, the claim is not patentable. See In re Marosi, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) And In re Thorpe, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP §2113.

2. Claims 47-48 are rejected under 35 U.S.C. 103(a) as obvious over Truchan et al (US 6,455,166) in view of Matsumoto et al (US 6,226,858).

The disclosure by the composition and method of making the tape by Truchan et al as set forth in rejection-1 under 35 USC 103(a) is herein incorporated.

The prior art is silent about the method of coating per claims 47-48.

In the analogous art, Matsumoto et al teach a method of making a superconductor wire by making a polycrystalline metallic substrate having roll textured surface oriented such that [001] plane is parallel with a rolled plane and <001> axis is parallel with rolled direction, an oxide layer formed on the

substrate wherein >90% of <100> plane is inclined at most 10 degrees, and forming a superconductor layer over it (Abstract, Cl-3, Ln 43 – Cl-4, Ln 15). Metallic Substrates included Ni and its alloys (Cl-4, Ln 60-67). Superconductors included REBa2Cu3O7 that was coated by method such as vapor phase and liquid phase techniques (Cl-6, Ln 1-8). The buffer layers included one or more layers of CeO2, YSZ, SrTiO3 and MgO (Cl-5, Ln 9-65). The Y123 oxide showed orientation of C-axis perpendicular to the surface of tape in its entire length and dependent upon the underlying oxide layer with improved Jc (Cl-8, Ex-1, Ln 43-50; Table-1). The thickness of the tape was 150 micron and the thickness of the YSZ was about 0.2 micron and that of Y123 oxide was 0. 4 micron deposited by laser ablation and 3 micron deposited by liquid epitaxy (Cl-8, Ln 3; Cl-9, Ln 30-35, 49-65).

With regard to claims 47-48, it would have been obvious to a person of ordinary skilled in the art to fabricate the YBCO films in the superconductor tape of Truchan et al by either liquid epitaxy or vapor methods over the teachings of Mastsumoto et al with reasonable expectation of success and predictable results with improved Jc, because Truchan et al is interested in attaining improved performance (Cl-1, Ln 33-37; Cl-6, Ln 23-25, 47-50), and is suggestive that a variety of deposition processes may be used to deposit various layers of textured substrate material, and the teachings are in the analogous art.

3. Claims 54-56 are rejected under 35 U.S.C. 103(a) as obvious over Truchan et al (US 6,455,166) in view of Jia et al (US 6,383,989).

The disclosure on the method of making the superconducting tape as set forth in rejection-1 under 35 USC 103(a) over Truchan is herein incorporated.

The prior art fails to teach a multilayer superconductor structure per the claims.

In the analogous art, Jia et al teach Improvements in critical current capacity for superconducting film structures are disclosed and include the use of, e.g., multilayer YBCO structures where individual YBCO layers are separated by a layer of an insulating material such as CeO2 and the like, a layer of a conducting material such as strontium ruthenium oxide and the like or by a second superconducting material such as SmBCO and the like (Abstract).

It would have been obvious to a person of ordinary skilled in the art to substitute the YBCO layers in the superconducting tape of Truchan et al with the superconductor layers of Jia et al as functional equivalent to benefit from improved Jc with reasonable expectation of success, because Truchan is concerned about improving Jc of the superconductor tapes and the teachings are in the analogous art.

4. Claim 58 is rejected under 35 U.S.C. 103(a) as obvious over Truchan et al (US 6,455,166) in view of Thieme et al (US 6,458,223).

The disclosure on the method of making the superconducting tape as set forth in rejection-1 under 35 USC 103(a) over Truchan is herein incorporated. Truchan et al is silent about the thickness of the Ni/metallic substrate.

In the analogous art Thieme et al teach textured metallic substrates of Cu-Ni alloys for super conductor tapes with a thickness of 51 micron (Abstract, Cl-14, Example-2, Ln 1-2).

It would have been obvious to a person of ordinary skilled in the art to substitute the metallic substrate of Truchan et al with that of Thieme et al as functional equivalent with reasonable expectation of success because the teachings are in the analogous art.

Allowable Subject Matter

Claim 45 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither teaches nor fairly suggest applicants groove structure, its dimensions and its density per the instant claim.

Response to Arguments

Applicants arguments filed 04/02/2008 have been fully considered and not persuasive to over come the prior art by Truchan et al. Applicants argue that the claimed invention provides microstructures with oriented long grains with high aspect ratio, but fail to overcome the prima facie obviousness over

Truchan et al. Applicants argue that “the claimed invention provides special treatment to the base substrate. For example, by appropriately treating the usually metallic substrate, long grains, i.e. grains with a minimum aspect ratio greater than that described in the prior art, are fabricated in said substrate” (Res, Pg-10), but there is no quantification to show that this is in fact the case, and although "That claims are interpreted in light of the specification does not mean that everything in the specification must be read into the claims" Raytheon Co. v. Roper Corp., 724 F.2d 951, 957, 220 USPQ 592, 597 (Fed. Cir. 1983), cert. denied, 469 U.S. 835 (1984). Formation of long/stretched grains in the direction of roll deforming of the substrate, and the presence of grooves is well known in the art as shown by Lee et al (US 6,114,287; Fig 2-3, Cl-3, Ln 27-37). The irregular potato-like shaped grains are not excluded by the instant claim limitations and they meet the limitation of long grains with elongated shape having an aspect ratio in the perpendicular direction (Res, Pg-11, Para-2, 4; Pg-13, Lines 1-4) in the absence of the dimensions of the grains.

In response to Truchan et al concentrates on refining the orientation: “misorientation angles greater than about 8° limited to less than 1%” contrary to elongation of grains allowing a rather large misorientation requiring just 10% of the total volume, elongation is a function of deformation in the direction of stretching of the substrate in the process of Truchan, and the volume fraction of grains as a function of misorientation degree is not the limitation of the instant claims as argued.

For the reasons set forth above applicants fail to patentably distinguish their method over the prior art.

The examiner suggests the applicants/attorney to call the examiner to discuss the patentability issues of the instant claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/
July 19, 2008.

/Stanley Silverman/

Supervisory Patent Examiner, Art Unit 1793

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